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In cooperation with State, Federal and Other Agencies

COTTON INSECT CONDITIONS FOR WEEK ENDING JULY 15, 1950  
(Seventh Cotton Insect Survey Report for 1950)

FLOYD F. BONDY: It is with great regret that we announce the passing on of Floyd F. Bondy yesterday afternoon, July 19. Ever since the cotton insect survey work was started Mr. Bondy has been in charge of the survey district that includes the Carolinas and Virginia. He was enthusiastically interested in the cotton insect survey work and gave it much time and energy. He was enthusiastic about the benefit to the cotton growers of the survey program. Mr. Bondy was well known to all cotton entomologists and to many farmers, county agents, and others interested in cotton production. He was recognized as an authority on the boll weevil and cotton aphid and the insecticides used for their control. Mr. Bondy was graduated from the Louisiana State University in 1917. Since then he has been engaged continuously in cotton insect research. He was at the Tallulah, Louisiana, field laboratory from 1917 to 1928 and since then he has been in charge of the cotton insect research program that is conducted in cooperation with this Bureau at the Pee Dee Experiment Station, Florence, South Carolina.

The boll weevil situation is extremely critical. For the next six weeks the cotton growers, county agents, entomologists, insecticide manufacturers and all others interested in cotton production will have to be on the job continuously if the boll weevil does not seriously reduce the yield of cotton on thousands of farms.

It is hoped that the farmers who suffered serious losses in 1949 because they quit using insecticides too soon will profit by their unfortunate experience of last year. On most farms the fight will have to be continued through August or as long as there are green bolls to be protected.

The tobacco budworm, Heliothis virescens (F.), the bollworm, Heliothis armigera (Hbn.) and several other insects are continuing to destroy many squares and bolls especially in the eastern States.

The cotton leafworm is now more threatening than during any recent year because it is making its rapid spread earlier than usual. It is now known to occur in at least 60 counties in Texas, 25 counties in Oklahoma, and 8 parishes in Louisiana. It has also reached Jackson County, Arkansas, and Washington County, Mississippi.

Many manufacturers of insecticides that are used for control of cotton insects are now operating 24 hours a day and 7 days a week in order to meet the requirements for insecticides. Even with this effort it will be necessary for farmers to use their supplies wisely and adjust their needs to the recommended insecticides that can be secured.

INSECTICIDES  
AND EQUIPMENT FOR APPLYING THEM

South Carolina: The summary statement that accompanied the Cotton Letter issued by the Extension Service, Clemson College on July 11 states that in certain counties shortages of insecticides and defoliants, and equipment for applying them, have been reported by the county agents. The shortages of the mixtures of benzene hexachloride and DDT were reported in Calhoun, Dillon, Orangeburg, and Williamsburg Counties. Shortages of toxaphene spray were reported from Darlington and Spartanburg Counties. Shortages of calcium arsenate were reported in Marion and Spartanburg Counties and of



defoliants in McCormick and Spartanburg Counties. It was reported that there was need for more hand dusters in Dillon and Oconee Counties, more mule dusters in Dillon, Laurens, Marion, and Oconee Counties, more tractor dusters in Darlington, Dillon, Laurens, McCormick, and York Counties, and more spray machines in Dillon, Marion, and York Counties.

Alabama: Dr. F. S. Arant, Auburn, wrote on July 12: "We are faced in Alabama with a shortage of cotton insecticides which threatens to become very critical. The Extension Service conducted a survey and found that a majority of the counties did not have sufficient material or prospects of obtaining sufficient material for adequately controlling boll weevil and other insects."

On July 13 Dr. Arant reported that supplies of insecticides for cotton insect control were inadequate in 41 counties, and stated: "The rainy weather we are currently having will aggravate the boll weevil control problem. In addition we are having many reports of heavy bollworm infestation. As a result our need for insecticides is urgent."

A statement issued by the Alabama Agricultural Experiment Station in regard to the Cotton Insecticide Situation is copied in full at the end of this report.

Louisiana: C. E. Smith, Entomologist, reported July 14: "Supplies of cotton poisons are becoming harder to get and are likely to become critically short soon."

R. C. Gaines reported on July 13: "The general use of poisons has about exhausted the supplies in some areas. Shortages are expected to develop in many localities in the near future."

Texas: A. N. White, San Benito, reported on July 13: "Farmers have already quit poisoning for weevils in most valley fields and the demand for insecticides has dropped off sharply."

Oklahoma: C. F. Stiles, Extension Entomologist, reported on July 14: "There are insecticide shortages in some counties at the present time; however, I think they are only temporary but I do believe that we are going to have an acute shortage all over the State during the next ten days or two weeks. Farmers in the State have not stocked very heavily."

Excerpts from Weekly Cotton Weather Bulletin issued by the Weather Bureau, U. S. Department of Commerce, New Orleans, Louisiana, July 11:

Weather and Cotton over the Belt: Temperatures were favorable for development of cotton, for control of weevils but infestation still runs high.

Oklahoma: Cotton fair to good condition, some poor due heavy infestation boll weevils with cool rainy weather favorable for weevil activity.

Louisiana: Cotton continues good growth, further improvement in Delta, fruiting well although weevil damage continued heavy in unpoisoned fields.

Mississippi: Cotton continues good to very good growth, squaring rapidly, blooming freely, bolls setting well; weevil activity general under control.

Tennessee: Cotton rapid growth, weevil infestation reported.

Georgia: Weather favoring weevil spread.

South Carolina: Weather favorable for weevil activity.

North Carolina: Control boll weevils difficult with heavy infestation most sections.

Arizona: Insect count increasing with warm humid weather, lygus and armyworm damage increasing, dusting, spraying underway.

### BOLL WEEVIL

Virginia: G. Mallory Boush, Assistant Entomologist, Tidewater Field Station, Holland, wrote on July 14 that more farmers are dusting their cotton than ever before. From half to three-quarters of the farmers are now dusting their cotton for boll weevil control. The chemicals used are toxaphene, chlordane, and calcium arsenate. Weather conditions have been favorable for the boll weevil and the frequent rain-falls have made it difficult for the farmers to get into their fields to apply insecticides. In the untreated portions of three cotton fields on the Experiment Station the infestations ranged from 38 to 60% punctured squares, while in the treated sections of these fields the infestations ranged from 4% to 26% punctured squares. In two other fields in Nansemond County that had not been dusted there was an average of 37% punctured squares and in two fields that had been dusted the average was 11% punctured squares.

North Carolina: Heavy rains during the week were favorable for boll weevil development. Many growers reported that the bad weather conditions have delayed poison applications. However, in spite of the adverse weather conditions, growers generally over the State are reporting good results when insecticide applications have been maintained at proper intervals. Weevils were found in 116 of the 118 fields that had received poison applications in 29 counties at an average rate of 13% punctured squares. The infestation ranged from 1 to 10% in 69 fields; from 11 to 25% in 33 fields, and in 16 fields more than 25% of the squares were punctured. In the examination of 100 unpoisoned fields in the same 29 counties, the average infestation was 67% punctured squares ranging from 1 to 10% in 3 fields; from 11 to 50% in 30 fields, and in 67 fields more than 50% of the squares were punctured.

South Carolina: The Extension Service Cotton Letter, issued at Clemson College on July 11, states that the average infestation in the poisoned fields in 40 counties was 13% punctured squares as compared with an average of 59% punctured squares in the unpoisoned fields. The average percentage of punctured squares was the same as the previous week in the poisoned fields and increased 3% from 56 to 59% punctured squares in the unpoisoned fields. Boll weevil infestations are high in all parts of the State where insecticides are not being properly used to reduce their numbers. The Cotton Letter states that 697,300 acres of cotton have been poisoned for boll weevil control through the week ending July 7 as compared with 209,400 acres of unpoisoned cotton in the State. On the average, there are  $4\frac{1}{2}$  times as many weevils in the unpoisoned fields as in the poisoned fields.

F. F. Bondy et al, Florence, reported that in the examination of 100 unpoisoned fields in 20 counties during the week ending July 15 the average infestation was 66% punctured squares as compared with 65% the previous week. In 5 fields the infestation ranged from 25 to 50% and in 95 fields more than 50% of the squares were punctured. In 57 poisoned fields in 19 counties the average infestation was 11% punctured squares as compared with 12% the previous week. In 26 fields the infestation ranged from 1 to 10%, and in 31 fields from 11 to 25% of the squares were punctured.



Georgia: First generation weevils are now present in most fields in the southern half of the State, and the infestation is increasing, especially in the Coastal Plain area. The average infestation in 150 fields examined in 37 southwestern counties was 20% punctured squares. No weevils were found in 6 fields in Early and Ben Hill Counties. The infestation ranged from 1 to 10% in 57 fields; from 11 to 25% in 53 fields; from 26 to 50% in 29 fields; and in 5 fields in Atkinson, Irwin, and Lanier Counties more than 50% of the squares were punctured. All of the 127 fields examined in 22 northeastern counties were infested at an average rate of 30% punctured squares. In 55 fields the infestation ranged from 1 to 25%; in 54 fields from 26 to 50%; and in 18 fields more than 50% of the squares were punctured. All of the 50 fields examined in 19 southeastern counties were infested at an average rate of 22% punctured squares. In the examination of 48 fields in 18 northwestern counties the infestation averaged 18% punctured squares. The infestation ranged from 1 to 25% in 35 fields; from 26 to 50% in 10 fields; and in 3 fields in Fayette County more than 50% of the squares were punctured.

Alabama: Boll weevils were found in all of the 71 fields examined in 12 northeastern counties at an average rate of 50% punctured squares. In 8 fields in Chambers, Cleburne, DeKalb, Madison, Marshall, and Shelby Counties less than 26% of the squares were punctured. The infestation ranged from 26 to 50% in 28 fields and in 35 fields more than 50% of the squares were punctured.

Tennessee: R. P. Mullett, Extension Entomologist and Plant Pathologist, reported on July 11 concerning the examination of cotton fields in 13 counties. During the last week of June, 14 of 25 fields of young cotton examined were infested with weevils at the average rate of 354 weevils per acre in the infested fields. All of the 13 fields examined in Bradley, Franklin, Lincoln, and Polk Counties had weevils ranging from 100 to 250 per acre. The other 12 fields in Benton, Gibson, and Henry Counties were free of weevils except for one field in Benton County. Thirty-eight of the 48 fields of older cotton examined were infested at an average rate of 27% punctured squares. All of the fields examined in Fayette, Hardeman, McNairy, Shelby, Franklin, Lincoln, and Haywood Counties were infested with weevils, but 10 of the 15 fields in Crockett, Gibson, and Henry Counties were free of weevils. It is doubtful if boll weevils were ever before as numerous in Tennessee during July as they are at the present time.

Boll weevils were found in all of the 27 fields examined in Fayette, Hardeman, McNairy, and Shelby Counties at an average rate of 32% punctured squares as compared with 38% the previous week. In 7 fields less than 11% of the squares were punctured; in 5 fields from 11 to 25%; in 8 fields 26 to 50%; and in 7 fields more than 50% of the squares were punctured.

Mississippi: Clay Lyle, Entomologist, reported July 17: "A week of cloudy, rainy, weather in nearly all sections of the State, with large numbers of new boll weevils emerging from squares and the first cotton leafworm of the season appearing in the State, have made the cotton insect situation much more serious than a week ago. Examinations were made on 806 farms in 44 counties, of which 727 had weevils averaging 18%, as compared to 18% last week and 28% at this time last year."

In the Delta Counties boll weevil infestation increased during the week. Weevils were found in 579 of the 661 fields examined in 17 Delta Counties at an average rate of 17% punctured squares as compared with 13% the previous week. No weevils were found in 82 fields. In 307 fields the infestation ranged from 1 to 10%; in 148 fields from 11 to 25%; in 99 fields from 26 to 50%; and in 25 fields in Washington and Bolivar Counties more than 50% of the squares were punctured.

Louisiana: Boll weevils continue to emerge from hibernation cages at Tallulah. In only four recent years, 1945, 1941, 1937, and 1932 was the survival of weevils about as high as this year. The emergence from May 1 to July 13 as compared with the past 19 years is as follows:

: Boll Weevil Survival		: Boll Weevil Survival	
Year	: in Hibernation Cages	Year	: in Hibernation Cages
	: from May 1 to July 13		: from May 1 to July 13
	Percent		Percent
1950	16.88	1940	.02*
1949	4.04*	1939	1.04*
1948	.38*	1938	.76*
1947	1.84*	1937	18.78
1946	9.28*	1936	.12*
1945	15.32	1935	.48*
1944	2.40	1934	4.24*
1943	.98	1933	.44*
1942	.08*	1932	16.42
1941	17.54		

\* Emergence completed

Rains and cloudy weather throughout the week were favorable for boll weevil development in most areas. The average boll weevil infestation in 428 fields in 29 parishes was 20% punctured squares as compared with 18% last week and 26% two weeks ago. No punctured squares were found in 12 fields. The infestations ranged from 1 to 17% in 155 fields; from 11 to 25% in 150 fields; from 26 to 50% in 74 fields, and in 37 fields more than 50% of the squares were punctured.

Arkansas: The average boll weevil infestation in 51 fields in 6 southeastern counties was 10% punctured squares as compared with 15% last week and 12% two weeks ago. No punctured squares were found in 11 fields. The infestations ranged from 1 to 10% in 23 fields; from 11 to 25% in 9 fields; from 26 to 50% in 7 fields, and in one field in Lincoln County more than 50% of the squares were punctured. The average infestation in 13 fields in 3 southwestern counties was 41% punctured squares. In the northeastern portion of the State the infestation averaged 6% punctured squares in 375 fields in Jackson, Poinsett, Pulaski, and Monroe Counties.

Texas: A. N. White, Associate County Agent - Entomology, reporting for the Lower Rio Grande Valley on July 13, stated: "The boll weevil is still doing considerable damage and in some of the heavier infested areas they are ruining large bolls normally thought safe from attack. Farmers with late fields who have been fighting weevils on a rigid schedule should stay with their applications at least one or two weeks or until they are sure the crop is out of danger, some farmers may have quit too soon. As the older fields mature the younger cotton will receive heavier attack from migrating weevils.

"It is too early at this time to give any broad evaluation of the control work this year, but I believe the results are very conclusive that proper application and the following of the rigid 4-5 day schedule has had more to do with achieving good control than anything else. Proper application comes only from keen interest and determination on the part of the farmer. It seems that the Calcium Arsenate - Sulphur mixture has given the most satisfactory and economical control."

No boll weevils were removed from the hibernation cages at Waco from July 8 to 14, inclusive. The total seasonal survival remains at 4.3%. The last weevil was



removed from the cages on July 7. Survival of overwintered weevils in the cages was higher this year than during any previous year with the exception of 1941 when the survival was 21.32%.

In the examination of 46 poisoned fields in McLennan and Falls Counties, the average infestation was 7% punctured squares ranging from 0.3 to 33%, as compared with an average of 28% ranging from 2 to 67% in 40 unpoisoned fields.

Continued rainy weather in most areas of the State has been favorable for insect buildup and they are causing much damage, especially in unpoisoned fields in central northern, and eastern areas. Boll weevils are now migrating in many sections of the State even in northern areas from fields where squares are scarce.

The infestation increased slightly during the week. Weevils were found in 821 of the 893 fields examined in 97 counties at an average rate of 24% punctured squares as compared with 20% the previous week. In 280 fields less than 11% of the squares were punctured; in 226 fields from 11 to 25%; in 181 fields from 26 to 50%; and in 134 fields more than 50% of the squares were punctured.

Oklahoma: C. F. Stiles, Extension Entomologist, reported on July 14: "Conditions have been ideal for the past ten days for boll weevil development, and I am expecting a heavy emergence of second brood weevils."

The Oklahoma Weekly Crop and Weather Bulletin issued at Oklahoma City on July 11 states: "The present condition of cotton rates from fair to good with some crops showing poor prospects due to the heavy infestation of boll weevils. Cool rainy weather during the week favored the development of the first brood of weevils which began to emerge during the first week of July. Boll weevils are reported as far West as Tillman County, where this insect is seldom found. Early cotton is in the blooming and squaring stage in the southeastern areas. Most fields are well cultivated and insect control is getting underway in most areas."

Weevils were found in 56 of the 72 fields of young cotton in 22 counties. The infestation ranged from 150 to 2,100 weevils per acre in the infested fields. Square infestation counts made in 84 fields in 20 counties averaged 40% punctured squares. The infestation ranged from 1 to 50% in 43 fields and more than 50% in 41 fields.

#### COTTON LEAFWORM

Texas: K. P. Ewing reported on July 17: "Authentic reports have been received of leafworm findings from 60 counties and no doubt this insect now occurs in every cotton growing section of the State and probably in every county. Control measures are being used for leafworms as far north as Bosque, Coryell, McLennan, and Hill Counties. Although scattered infestations of leafworms now occur in every section of the State, heavy infestations are still very spotted and limited except in Gulf Coast and southern counties. Many fields heavily infested with leafworms are not being poisoned in southern counties and indications are that moths from South Texas and probably Mexico are being disbursed in large numbers to northern areas in Texas and other States. With such a large acreage of late planted cotton and the weedy growth in many untreated fields of early planted cotton throughout most of the State it is entirely possible that control measures for leafworms will be needed in many sections of the State within the next few weeks."

Oklahoma: Cotton leafworms are increasing rapidly. In addition to the 10 counties reported infested in last week's report, the following counties are now known to be infested: Blaine, Kiowa, Jackson, Tillman, Comanche, Marshall, Garvin, McClain,



Cleveland, Pottawatomie, Creek, Wagoner, McIntosh, Pittsburg, and Sequoyah, making a total of 25 counties infested in the State.

Louisiana: Scattered light infestations of cotton leafworms have now been reported from 8 parishes: Madison, Morehouse, Avoyelles, Acadia, Vermilion, Evangeline, Richland, and St. Landry Parishes. Leafworms were present in sufficient number in one field in Vermilion Parish to justify poisoning.

In the Cotton Insect Survey Report for the week ending June 30, mention was made of a pupa of the cotton leafworm collected near Tallulah on June 28. R. C. Gaines wrote on July 14: "This is probably the earliest record of the appearance of leafworms in this locality. The fact that a pupa was collected on June 28 indicated that we had some egg deposition in early June. In looking over the records for past years, we find that July 6 is the earliest that a leafworm has been found in Madison Parish."

Mississippi: Clay Lyle, Entomologist, reported July 17: "The first cotton leafworm was found in Washington County at the Delta Branch Experiment Station on July 14. Several other counties are probably infested."

#### MISCELLANEOUS INSECTS

South Carolina: The Cotton Letter issued at Clemson College on July 11 states that the bollworm situation is still serious in most sections of the State. Red spiders are showing up in spotted fields in some of the eastern counties and cotton fleahoppers are blasting squares throughout the Piedmont Counties.

On June 27 C. E. Jernigan submitted 4 lepidopterous larvae collected from cotton in Florence County. All specimens proved to be the tobacco budworm, Heliothis virescens (Fabr.). On June 29 L. M. Sparks, Jr. collected 5 larvae on cotton in the northern part of Marlboro County. Four of these specimens were the tobacco budworm, H. virescens, and one specimen proved to be a bollworm, H. armigera (Hbn.). On June 30 F. F. Bondy collected 6 larvae from cotton in Marlboro County, 3 proved to be tobacco budworms and the other 3 were bollworms, H. armigera. C. E. Jernigan found the yellow-striped armyworm, Prodenia ornithogalli, Guen., attacking cotton in Florence County on June 30. All determinations were made by J. G. Franclemont.

Alabama: Lepidopterous larvae appear to be doing less damage in northern counties than in the central and southern parts of the State. However, one field examined in Chambers County had an average of 44% of the squares damaged by lepidopterous larvae.

Tennessee: Although lepidopterous larvae damage was reported in more fields this week than last, the percentage of damaged squares was lower in most areas.

Mississippi: In the examination of 661 fields in 17 Delta Counties, lepidopterous larvae were found in 132 fields, aphids in 21 fields, spider mites in 14 fields, rapid plant bugs in 2 fields, and tarnished plant bugs in 1 field.

Louisiana: In Madison Parish records were made of square injury by lepidopterous larvae while examination 38,000 squares in 86 fields for boll weevil punctures. An average of 0.3% of the squares was injured as compared with 3.4% last week. Bollworm moths have been reported in cotton fields in small numbers in the northwestern portion of the State.

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PREPARED JULY 20, 1950

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ALABAMA AGRICULTURAL EXPERIMENT STATION  
of the Alabama Polytechnic Institute  
M. J. Funchess, Director Auburn, Alabama

COTTON INSECTICIDE SITUATION  
F. S. ARANT, Entomologist

Alabama farmers are faced with a shortage of cotton insecticides!

Scarcity of poisons is a result of excessive early applications and of strikes in chlorine-producing plants that supply raw materials for manufacturing cotton insecticides. It is therefore essential that wise use be made of all available supplies.

The two top insecticides recommended by the A.P.I. Agricultural Experiment Station are 20 per cent toxaphene and 3-5 mixtures of BHC-DDT, supplies of which are short.

Alternatives

Calcium arsenate is also a recommended dust for boll weevil control. In order to conserve short supplies of BHC-DDT, the Station recommends that calcium arsenate be applied in alternate applications with BHC-DDT. Yields of cotton from experimental plots given such alternate treatments have been as high as from plots on which BHC-DDT was used in every application.

Where BHC-DDT dust is not available to alternate with calcium arsenate, it is recommended that any available supplies of calcium arsenate be utilized by alternating this material with calcium arsenate that contains 2 per cent nicotine. Should bollworms develop in fields receiving calcium arsenate, 10 per cent DDT should be applied at the rate of 15 pounds per acre to control the worms.

Many inquiries have been received about two insecticides not on the recommended list. These materials are aldrin and chlordane.

Aldrin was used experimentally on cotton in Alabama in 1949 and is being used in 1950. It shows promise against boll weevil, but its use is still in the experimental stage. It is available in the form of a dust containing  $2\frac{1}{2}$  per cent aldrin and 5 per cent DDT. This mixture will control boll weevil and bollworm but it will not control aphid. CAUTION: aldrin is more hazardous to use than the recommended cotton poisons. It is highly poisonous to warm-blooded animals and may be absorbed readily through the skin. It is also poisonous if inhaled or eaten.

Sufficient research has not been done to adequately evaluate aldrin. However, where the recommended poisons are not available, it is suggested that aldrin may be tried. In using aldrin, the farmer should take all possible precautions to protect himself against the poisonous effects of the material.

Aldrin should not be applied with hand-dusters or with walking-type traction dusters. If aldrin is applied with plane or tractor equipment, the operator of the equipment should wear clothing that protects the body from the dust. A respirator would also be of value to the operator in applying this dust. As soon as the dusting operation is completed, he should bathe and discard clothes until they are laundered.

Chlordane is another insecticide which is available. However, this material has given somewhat erratic and, in some instances, unsatisfactory results in the control of boll weevile under Alabama conditions.